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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/804,877	03/13/2001	Yumin Zhang	SAR 14211	1828

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EXAMINER	
CHASE, SHELLY A	
ART UNIT	**PAPER NUMBER**
2133	

DATE MAILED: 06/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/804,877	ZHANG, YUMIN
	Examiner	Art Unit
	Shelly A Chase	2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 March 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *11 and 12* is/are allowed.

6)☒ Claim(s) *1-5,10,13,21-23 and 25* is/are rejected.

7)☒ Claim(s) *6-9,14-20 and 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1 to 25 are presented for examination. Acknowledgement is made of preliminary amendment filed 7-5-2001.

Specification

2. The disclosure is objected to because of the following informalities: page 1 lines 30 to 35 please change "expensive" and "become creates".

Appropriate correction is required.

Claim Objections

3. Claim 11 is objected to because of the following informalities: please change "comprising;" to --- comprising: ---.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 21, recites the limitation "the number of redundancy bits" recited on line 2. There is insufficient antecedent basis for this limitation in the claim.

Inventorship

6. In view of the papers filed 9-12-2001, it has been found that this nonprovisional application, as filed, through error and without deceptive intent, improperly set forth the inventorship, and accordingly, this application has been corrected in compliance with 37 CFR 1.48(a). The inventorship of this application has been changed by adding the requested names.

The application will be forwarded to the Office of Initial Patent Examination (OIPE) for issuance of a corrected filing receipt, and correction of the file jacket and PTO PALM data to reflect the inventorship as corrected.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1 to 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eroz et al. (USP 6430722 B1) in view of Rowitch et al. (*On performance of hybrid FEC/ARQ systems using rate compatible punctured Turbo (RCPT) codes*, IEEE).

Claim **1**:

Eroz substantially teaches a forward error correction scheme for a plurality of data blocks wherein the transmitted data blocks are framed into fixed length of N bits per frame, the scheme comprising: a turbo code encoder [208] receiving the frames and encoding the received frames to produce parity bits [310 & 314] (see fig. 1 and col. 6, lines 19 to 32). Eroz also teaches the selection of outputs [310 & 314] are changed for puncturing due to the coding rate (see col. 6, lines 47 to 51 and col. 7, lines 49 et seq.). Eroz further teaches the BER is measured and evaluate due to a respective coding rate by applying different puncturing patterns (see col. 10, lines 16 et seq.). Eroz does not specifically teach the channel coded signal has for each data block a number of bits equal to a number of bits in a particular data block plus an initial number of error correcting bits; however, Rowitch in an analogous art teaches forward error correction using rate compatible punctured turbo codes comprising partitioning the encoded symbols for each stream into subblocks wherein each subblock contains systmatic bits and parity bits (see pg. 949 sect. B). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the encoded blocks of Eroz to include the encoded subblocks with systmatic bits and parity bits as taught by Rowitch since, Rowitch teaches the encoded subblocks with systmatic bits and parity bits are well known and used in the art for achieving better coding rates (see pg. 948 sect. 1). This modification would have been obvious because a person of ordinary skill in the art would have been motivated to employ an encoding data for optimal coding rate.

As per claim **2**, Eroz teaches adjusting the coding rate based on the measured BER (see col. 7 lines 65 et seq.); interpreted as "receiving a control signal comprising said channel quality measure."

As per claims **3** and **4**, Eroz teaches evaluating the BER, adjusting the coding rate for various puncturing patterns for achieving best BER performance (see col. 10, lines 17 et seq.), interpreted as increasing or decreasing the number of error correction bits for either a low channel quality or a high channel quality.

As per claim **5**, Eroz teaches the scheme evaluates a BER (see col. 10, lines 57 to 61).

As per claim **10**, Eroz teaches forward error correction for data communication for either a satellite telephone or cellular telephone or other systems (see col. 1, lines 20 to 25).

9. Claims **13, 21** to **23** and **25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodama et al. (USP 541678) in view of McCallister (USP 5878085).

Claim **13**:

Kodama substantially teaches an apparatus for error correction encoding wherein a plurality of data blocks are encoded by convolutional codes, the apparatus comprising: a puncture bit control circuit [46] ("an adaptive controller") controlling bits to be punctured by the puncturing circuit [45] (see col. 11, lines 40 to 46) and puncturing circuit ("puncture encoder") puncturing the class bits received from the encoder circuit according to a specified puncturing pattern for a specified coding rate (see col. 11, lines

51 to 65). Kodama also teaches the encoded data includes a number of bits and a predetermined number of error correction bits based on various coding rates (see fig. 9 and col. 12, lines 1 to 15).

Kodama does not specifically teach the puncturing is adjusted due to channel quality measure; however, McCallister in an analogous art teaches a pragmatic trellis code modulation encoder comprising a puncture controller [58] controlling the puncturing of bits due to high signal to noise ratio (SNR) for achieving effective coding rate (see col. 5, lines 55 et seq.). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the puncturing control circuit of Kodama to include controlling the puncturing of bits for maintain coding rates due to high SNR as taught by McCallister. This modification would have been obvious because a person of ordinary skill in the art would have been motivated to employ a controller for maintaining effective coding rates when the SNR is high thus, producing an apparatus for efficient coding.

As per claims **21** to **23**, Kodama does not specifically teach the adaptive controller increasing or decreasing the number of error correcting bits or the channel quality comprises a signal to noise ration or bit error rate; however, Mc Callister discloses the puncturing controller maintains coding rate by adjusting the puncturing bits due to the (SNR) (see col. 6 lines 1 to 15). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the puncturing control circuit of Kodama to include controlling the puncturing of bits for maintain coding rates due to high SNR as taught by McCallister. This modification

would have been obvious because a person of ordinary skill in the art would have been motivated to employ a controller for maintaining effective coding rates when the SNR is high thus, producing an apparatus for efficient coding.

As per claim **25**, Kodama teaches the error correction for digital communication wherien the signal maybe for an automobile telephone or a portable telephone (see col. 1, lines 12 to 15).

Allowable Subject Matter

10. Claims 6 to 9, 14 to 20 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Claims 11 to 12 are allowed.

12. The following is a statement of reasons for the indication of allowable subject matter: the prior art made of record teaches various methodologies for encoding transmitted data as detailed above; however, the prior art made of record fail to teach or fairly suggest the novel element of a back channel as claimed in claim 11. Specifically, the prior art made of record taken alone or in combination fails to teach or fairly suggest or render obvious a method for transmitting a data signal over an information channel, where the data signal comprises a sequence of data blocks, said method comprising:

generating said control signal comprising said channel quality measure to a back channel. Claim 12 is directly dependent on claim 11, thus this claim is allowable over the prior art made of record.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shelly A Chase whose telephone number is 703-308-7246. The examiner can normally be reached on Mon-Thur from 8:00 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on 703-305-9595. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shelly A Chase